

the electrolytic action of the current; and I have usually called it the interposed plate.

746. In order to simplify the conditions, dilute sulphuric acid was first used in all the cells, and platina for the interposed plates; for then the initial intensity of the current which tends to be formed is constant, being due to the power which zinc has of decomposing water; and the opposing force of decomposition is also constant, the elements of the water being unassisted in their separation at the interposed plates by any affinity or

secondary action at the electrodes (479), arising either from the nature of the plate itself or the surrounding fluid.

747. When only one voltaic pair of zinc and platina plates was used, the current of electricity was entirely stopped to all practical purposes by interposing one platina plate, fig. 52, *i.e.* by requiring of the current that it should decompose water, and

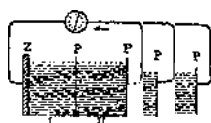


Fig.
52.

Fig-
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Fig.
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evolve both its elements, before it should pass. This consequence is in perfect accordance with the views before given (645, 652, 708). For as the whole result depends upon the opposition of forces at the places of electric excitement and electro-decomposition, and as water is the substance to be decomposed at both before the current can move, it is not to be expected that the zinc should have such powerful attraction for the oxygen, as not only to be able to take it from its associated hydrogen, but leave such a surplus of force as, passing to the second place of decomposition, should be there able to effect a second separation of the elements of water. Such an effect would require that the force of attraction between zinc and oxygen should under the circumstances be *at least* twice as great as the force of attraction between the oxygen and hydrogen.

748. When two pairs of zinc and platina exciting plates were used, the current was also practically stopped by one

interposed
platina plate, fig. 53. There was a
very feeble effect of a current
at first, but it ceased almost
immediately. It will be referred
to, with many other similar effects,
hereafter (753).